

Climate & Flood Resilience

Goals & Objectives

1. Encourage flood emergency preparedness and response planning in South Hero
2. Encourage the protection and restoration of floodplains, wetlands and upland forested areas that attenuate and moderate flooding and fluvial erosion.

Strategies

1. Continue to be a member of the National Flood Insurance Program. The Planning Commission and Zoning Administrator shall ensure that the Land Development Regulations meet all NFIP minimum requirements. The Planning Commission shall ensure that the Land Development Regulations continue to protect floodplains, prevent damage to property, and mitigate risk to human lives
2. The Planning Commission, Selectboard, and Town emergency services personnel shall work with State and Federal agencies to ensure that connection to mainland Vermont via U.S. Route 2 is maintained during a flood event.
3. The Planning Commission and Selectboard shall draft and adopt a Hazard Mitigation Plan for South Hero that addresses mitigating risks posed by flooding and other disasters
4. The Selectboard shall annually adopt a Local Emergency Operations Plan (LEOP).
5. The Planning Commission and Zoning Administrator should work with the Vermont Agency of Natural Resources to investigate future adoption of River Corridor or Fluvial Erosion maps and regulations.

Flood Resilience

Floodplain

The Town of South Hero is in the unique position of being on an island, surrounded by the waters of Lake Champlain. The land is fairly flat, and there are few streams of any significance on the island. The result is that the island typically does not face catastrophic inundation resulting from single major storm events such as hurricanes. The flooding that does occur tends to be from the rising waters of Lake Champlain. Such flooding tends to start slowly and last for an extended amount of time. Flooding can pose major transportation issues, property damage, and environmental damage to Lake Champlain.

South Hero Local Hazard Mitigation Plan

In 2018, the Town adopted a local hazard mitigation plan (LHMP) which has been approved by FEMA. The plan details historic events and future mitigation of major disasters, including flooding, severe thunderstorms and winter storms. The Town Plan endorses the recommendations of the LHMP.

South Hero's Land Development Regulations includes regulations specific to development in the Special Flood Hazard Area (SFHA), or 100-year floodplain, as delineated by FEMA on the Town's Flood Insurance

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Rate Maps (FIRM). Existing FIRMs are dated as effective on June 15, 1978 and the Flood Insurance Study was published in June 3, 1988. A new version of the FIRM is expected to be released in 2023.

The 100-year flood plain includes several tributaries to Lake Champlain, the “Crick”, and several wetlands (See Flood Insurance Rate Maps for Town of South Hero in Town Clerk’s Office for official descriptions.) Map X also depicts the 100-year flood zones.

All adopted flood hazard regulations meet or exceed minimum requirements set by the National Flood Insurance Program minimum. Adoption of flood hazard regulations and the FIRM allows the Town to be a member of the National Flood Insurance Program (NFIP) and enables all residents of South Hero to purchase flood insurance. As new flood maps are released by FEMA, the Town may need to further update its floodplain regulations to maintain NFIP compliance.

The primary flood threat facing the Town is posed by Lake Champlain. The last time Lake Champlain exceeded the USGS Major Flood Stage Elevation (101.5 feet above Sea Level) was in 2011. The Lake has exceeded 100 feet in elevation approximately 5 times in the past 15 years (see Chart X). The most recent large flooding event was the Flood of 2011.

During that flood Lake Champlain’s waters reached a height of 103.27 feet above sea level (ASL) as measured at the USGS gage at the Echo Center in Burlington. Flooding was exacerbated by waves caused by high winds.

Flood risk on Lake Champlain in South Hero is greatest from mid March to early June, with the highest risk during early May as melting snow from the mountains flows into the Lake and raises the water level. Abnormally high rainfall during this time frame increases the likelihood of flooding.

Roughly 5% of all structures in South Hero are located in the 100-year floodplain. The location of private property in the floodplain has led to issues with septic systems and unsecured personal property such as propane tanks. More attention should be paid by the Town to ensure that lakeshore property owners located within or near the Special Flood Hazard Area take proper precautions against flooding. Such precautions should include securing propane or other fuel tanks in compliance with the NFIP, as well as securing any loose personal property that might get washed into the Lake during a flood. Further investigation needs to be done regarding ways to improve septic systems to be more tolerant of flooding in cooperation with the State Agency of Natural Resources.

Parts of South Hero, such as the south end of Keeler Bay, Wally’s Point, and parts of West Shore Road, Hochelaga Road, and U.S. Route 2 near Milton are and will continue to be the parts of South Hero most at risk for flooding from Lake Champlain. Hochelaga Road and West Shore Road are Town roads and Route 2 is a U.S. highway. These roads may need to be elevated in places at some time in the future to minimize flood damage. During the 2011 flood, access to South Hero across the causeway from Milton on U.S. Route 2 was reduced to one lane due to flooding through the wildlife preserve at the State Park. A more severe flood could pose serious access problems for residents of South Hero because U.S. Route 2 is one of the only three means of vehicle access to the Lake Champlain Islands from the United States.

There are four flood stages defined by USGS for Lake Champlain. These are:

- Action Stage, at 99.9 feet Above Sea Level (ASL),
- Flood Stage, at 100.0 feet ASL,
- Moderate Flood Stage, at 101 feet ASL, and
- Major Flood Stage, at 101.5 feet ASL.

Lake Champlain flows north into Canada, via the Richelieu River before proceeding to the St. Lawrence River in Montreal before eventually flowing to the Atlantic Ocean. That means that Canada, which is north of Vermont, is actually “downstream” when referring to Lake Champlain’s flow. After the flooding in 2011, an international joint commission was formed to examine potential structural and non-structural solutions to minimize impacts of flooding. The report recommends two measures as possible structural measures to reduce flooding, selectively removing material and constructing a weir in the Richelieu River and allowing moderate levels of waters to be diverted through the Chambly Canal during flood events. South Hero encourages further efforts to increase flows out of Lake Champlain.

Stream Corridor

Another type of flooding that occurs in rivers and seams is fluvial erosions. Fluvial erosion occurs when fast lateral and vertical movement of streams and rivers cause erosion of the bank. Historic attempts to control stream flows, such as channelization, can increase risks for fluvial erosion. For smaller streams with a drainage area of between .5-2 square miles, the Vermont Agency of Natural Resources recommends limiting development in a stream corridor of at least 50 feet from the top of the bank to protect human life and infrastructure. South Hero has adopted river corridor standards that limit development near its streams.

Climate Resilience

In Vermont as a whole, climate change is expected to bring increased precipitation, warmer average temperatures, and increases in the strength and frequency of storms (Vermont Climate Action Plan). In the Lake Champlain Basin, rising temperatures are expected to result in less ice cover and an increase in average annual precipitation and increased storm intensity. In the shorter term, increased heavy storms will likely increase flooding. In the long term, by 2100 the Lake’s average level may rise as much as 1-2 feet (Lake Champlain Basin Program). Statewide insured losses are expected to increase 2-4% by 2050 as a result of climate change (Vermont Climate Action Plan).

Equity in Flood & Climate Resilience

Climate and flood resilience planning efforts must focus first on those most impacted by climate change and who have the least social and economic resources to adapt to its effects. Studies have shown that groups such as low-income residents, senior residents and residents of color are among those more likely to be impacted by climate change (Vermont Climate Action Plan). For instance, while the homes of individuals at all income levels may be located in the floodplain, those with lower incomes are less likely to be able to afford mitigation efforts. Furthermore, frontline communities should be included in climate resilience planning to ensure that proposed solutions meet the needs of those most impacted.

The Town will need to plan for and adapt to these effects in order to reduce impacts to residents, infrastructure and property. South Hero is uniquely vulnerable to climate impacts because of its location on Lake Champlain and the high number of shoreland properties. Town should consider developing a climate resilience plan to identify climate vulnerabilities. Many climate vulnerabilities will need to be addressed at the regional or state level, such as the resiliency of the electric grid against severe storm events.